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Conservation Systems Research

Weed Control and Cotton Response to Glyphosate and Trifloxysulfuron (Envoke)

RESEARCH PROJECT REPORT NO. 01

Tank-mixed Envoke and glyphosate experiment – cotton response.

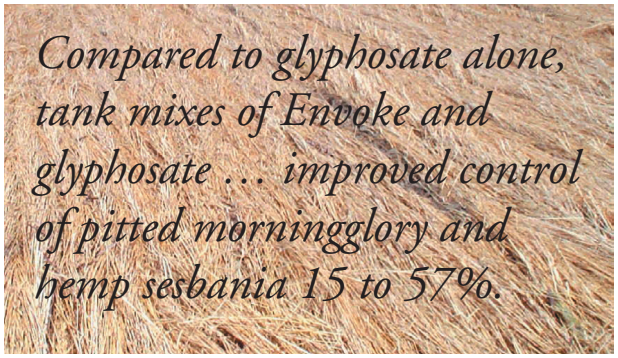
The Challenge

Trifloxysulfuron (Envoke®) is a new, postemergence herbicide that targets several broadleaf, grass, and sedge weed species, including some that are resistant to glyphosate. A tank mix of the two herbicides could be an effective postemergence treatment, covering a broad spectrum of weeds. However, problems have occurred when Envoke was mixed with some postemergence grass herbicides, and little was known of any negative or positive effects when mixed with glyphosate.

The Experiment

Greenhouse and field studies in Alabama and Mississippi evaluated interactions between glyphosate and Envoke on control of barnyardgrass, browntop millet, hemp sesbania, johnsongrass, pitted morningglory, prickly sida, sicklepod, and velvetleaf. Envoke and glyphosate, alone and in tank mixes, were applied over-the-top at early postemergence (2 to 3 leaf stage) and late postemergence (4 to 6 leaf stage). Herbicide efficacy was assessed two to three weeks after treatment.

Another field study evaluated cotton injury from herbicide applications. Glyphosate, Envoke, and tank mixes of the two were applied over-the-top at several cotton growth stages, with cotton injury estimated visually by leaf discoloration and plant stunting.



What We Learned

Weed Control

- Glyphosate provided better overall weed control than Envoke. However, glyphosate control of pitted morningglory and hemp sesbania was not satisfactory, especially for the late postemergence application.

- Envoke alone did not provide adequate control of any weed species evaluated.

- Compared to glyphosate alone, tank mixes of Envoke and glyphosate did not produce any antagonistic effects and improved control of pitted morningglory and hemp sesbania 15 to 57%.

Tank-mixed Envoke and glyphosate experiment – weed response.

Cotton Injury

- Cotton injury for all herbicide treatments was minor (less than 13%) two weeks after treatment, and was almost nonexistent (less than 5%) three weeks after treatment.

- Number of open and unopened bolls and number of nodes per plant was not different across all treatments.

- Only the 6-leaf followed by 9-leaf over-the-top application of Envoke significantly reduced cotton yield.

Conclusions

Addition of Envoke to glyphosate improved control of pitted morningglory and hemp sesbania in glyphosate-resistant cotton, with little to no negative effect on cotton yield.

Related Publications

Koger, C.H., A.J. Price, and K.N. Reddy. 2005. Weed control and cotton (*Gossypium hirsutum*) response to combinations of glyphosate and trifloxysulfuron. Weed Technol. (*in press*).